

THE SPEECH OF FIRST AND THIRD GRADE BOYS
CONTRASTED BY MEANS OF TRANSFORMATION GRAMMAR

by

MARY LOU ALEXANDER

B. A., Oklahoma Baptist University, 1956

A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree


MASTER OF ARTS

Department of Speech

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1966

Approved by:


Major Professor

LD
2668
T4
1966
A377
c.2
Document

ACKNOWLEDGMENTS

The author wishes to acknowledge the guidance, criticism and support of her committee members, Dr. Leo Engler, major professor, Dr. Richard C. Clark, Dr. Mary Francis White, and Dr. Norma Bunton, Head of the Speech Department. I wish to thank Max Smith and express my appreciation for his suggestions and criticisms which enabled me to write the Transformation Grammar section of this thesis.

I wish to thank Carl Alexander and my children, Dawna, Debra and David for their encouragement and patience during the preparation and writing of this thesis.

TABLE OF CONTENTS

| Chapter | Page |
|--|------|
| I. INTRODUCTION | 1 |
| Purpose | 2 |
| Scope | 2 |
| Review of Literature | 3 |
| Justification | 9 |
| II. PROCEDURE | 12 |
| Collection of Data | 12 |
| The Transformational Grammar | 13 |
| Restrictions of the Grammar | 14 |
| The Grammar | 15 |
| Tabulation | 30 |
| III. RESULTS | 31 |
| Introduction | 31 |
| Single Base Transformations | 31 |
| Generalized Transformations | 33 |
| Conclusion | 36 |
| APPENDIX | 38 |
| FOOTNOTES | 44 |
| LITERATURE CONSULTED | 47 |

CHAPTER I

INTRODUCTION

1.1 In recent years there has been increasing interest in the analysis of the language of children to see how a child learns to speak his native language, what the stages of development are, and how his usage differs from that of the adult. Most of the literature which has been published appears to have been primarily concerned with sentence length and the acquisition of sounds, vocabulary, and inflections. Some investigations which deal with the development of children's language have been concerned with what can occupy various syntactic slots (subject, verb, and post-verb positions) and what the relationships of these slots are to each other.

There are various schools of thought concerning linguistic methods of describing a language. The main schools of thought are the Tagmemic theory (sometimes referred to as a slot filler approach to describing the elements of a sentence), the Immediate Constituent theory, and Generative Grammar (often called transformational) theory. Linguists who are concerned with describing the language can use any one of these theories or they are at liberty to use a combination of these theories at various levels of analysis.

This investigation is part of a larger research project which has been undertaken by Engler and Hannah¹ to determine norms for the speech of children. Their description of the syntactic structures of children is based upon a tagmemic analysis of what slots comprise a sentence and an immediate constituent analysis of what can occupy these slots grammatically. This thesis will add an additional dimension to the analysis undertaken by the Engler-Hannah study, through the use of a transformational grammar. Chomsky²

states, "It (generative grammar) leads us to establish phrase structure and transformational structure as distinct levels of representation for grammatical sentences." The use of transformational grammar can help to supplement and complement the studies based upon a tagmemic and immediate constituent analysis because it can help explain the language acquisition process by adding a new level of syntactic analysis. Transformational grammar provides an explanatory model which reveals the rules a child internalizes to enable him to generate new sentences in the language.

1.2 Purpose. The purpose of this study is to indicate the development of children's language of first and third grade boys using a transformational grammar for the analysis. The hypothesis upon which this thesis is based is:

There are some transformations that increase in frequency of occurrence as a child's language develops and matures.

1.3 Scope. The scope of this thesis encompasses only a description at the syntactic level of the language of twenty-four first and twenty-four third-grade boys with, according to Engler and Hannah, normal speech (e.g., 90-110 I. Q. on the Otis scale and with no known speech or language problems). The analysis consists of a transformational grammar written to cover this corpus and a tabulation of frequency of occurrence of transformational rules used. The analysis is only of the complete sentences: aberrant structures, minor sentences (i.e., Yes. No. Maybe. Sure.), and incomplete statements will not be analyzed. Since the discussion centers around a frequency tabulation of transformations found in the speech of the boys, the grammar consists only of phrase structure rules and transformational rules found within the corpus. Morphophonemic rules will not be written or discussed because the investigator is concerned only with the syntactic level.

1.4 Review of Literature.

1.41 Analysis of the Development of Children's Language. The development of the speech of children has been under investigation for a number of years, particularly since 1930. Leopold's review³ of children's language and development reveals that most of the work has been from psychological, educational, and philosophical viewpoints, concerning the period of the child's development from the beginning of speech production through six years of age. He also notes that linguists have not investigated thoroughly enough this important aspect of language ontogeny. Much work has been done in the area of articulation and the ability of children to hear and make sound-discriminations. However, the area of syntactic analysis has just begun to receive attention.

Many studies that have purported to be sentence analyses have instead been word-centered studies. McCarthy's work⁴ is divided into four parts: (1) articulation, (2) sound discrimination, (3) verbalization, which includes length of response, grammatical inaccuracies, and a frequency count of the parts of speech used, and (4) vocabulary. Templin's study⁵ is patterned after McCarthy's to make the results of the two studies comparable. Templin's study reveals similar results with the exception of longer sentence length. These are good studies as far as frequency and percentage counts are concerned, but they reveal little concerning the development of syntactic concepts and rules which enable a child to produce a sentence.

Mussen and Conger⁶ reveal that a child increases his mean sentence length of 1.2 words per sentence at the age of two to 5.1 words at the age of five. They say that the child's speech as he matures is "characterized by a greater definiteness and complexity as shown by an increase in relational words and a fairly good mastery of inflections." This study does not include

a description of syntactic development; it simply asserts that greater complexity is apparent as a child matures. Berko⁷ has investigated the acquisition of morphology by young children, with emphasis on acquisition and mastery of the irregular forms as well as the regular inflectional endings. However, she does not study the relationship between the acquisition of morphology and the development of syntax. Brown's study⁸ centers around the concept that takes the part of speech membership (i.e., noun, verb, adj, adverb) of a new word as a clue to the meaning of the word. In other words this study is semantically oriented. The studies discussed above reveal that the investigations have concentrated on word-centered analysis.

Recently investigators have become aware of the necessity of departing from this compartmentalization of sentences to seek new ways of analyzing the complete sentence and the interrelationships within a sentence--the morphology and syntax. Some investigators have sought methods for doing a syntactic analysis of children's language. Brown and Berko⁹ hypothesize that children, two and three years old, induce rules concerning the usage of a word by means of privilege of occurrence of the word. This means that a child develops a sense of rules to utilize syntactic similarity of words. Thus the similar syntactic potential of words becomes important for the determination of word association as the ability to use more complex syntactic patterns increases. In separate studies Miller and Ervin,¹⁰ Brown and Fraser,¹¹ and Braine¹² have encountered similar results, although they use different terminology. They have found definite syntactic relationships between the two words in two-word sentences of two-year-olds. Braine calls these two classes, "pivot words" and "X-class words": Miller and Ervin call them "operators" and "non-operators." The pivot words are similar to Fries's "function words"¹³ in his study of

adult speech, and the X-class words resemble the "form-class" words established by Fries. The two classes have only certain positions relative to each other in any sentence. Mandler and Mandler¹⁴ state that a child does not learn the content meaning of the word but learns the structural aspect of the sentence carried by marker words. These studies have all involved the analysis of two word sentences of two- and three-year-old children. Syntactic analysis needs to be extended beyond this age group and sentence complexity.

Perhaps investigators of the language acquisition process have concentrated on studying the language of children from the onset of language through the age of five because during this period there is such dramatic growth, development, and change. However, investigators realize that, although by the age of five or six he has mastered the basic language, as the child matures beyond this age his language continues to develop and change. Although Strickland's primary objective¹⁵ is to contrast the speech of first through sixth grade children with the reading material available to them, only her analysis of their speech is of interest to this study. Strickland has applied a syntactic analysis to the sentences of the speech of these children. She first categorizes the sentences into types, and then investigated the various slots--subject, verb, complement, object--and what structures--phrases, clauses, and/or words--filled these slots. Loban¹⁶ has done a longitudinal study of 338 children beginning when these children were in kindergarten and sampling their language every year through the twelfth grade. His analysis is based upon the same procedure used by Strickland. Engler and Hannah¹⁷ are currently engaged in a research project to determine norms in the speech of first, third, and fifth grade children. Their

analysis consists of specific major areas: (1) sentence types which are determined on the basis of verb types used, (2) expansion of slots--what can fill the subject, verb, and post-verb slots and the ways that they can be expanded without changing the basic sentence types, (3) concatenation--the method used to combine sentences for purposes of expansions. These three studies give an excellent analysis of the component parts of a sentence and should provide a scale to evaluate the usage of the syntactic slots and of the morpho-syntactics of the slot-fillers.

The use of transformational grammar to explain the rules which enable the child to generate new, grammatical sentences has been introduced by Menyuk¹⁸. She recorded the speech of nursery school and first-grade children and compared their usage of certain transformations. Loban¹⁹ states "a technique for studying complexity is emerging from the current theoretical work of ... Noam Chomsky²⁰." In Loban's study a transformational analysis is limited to two subjects--one in the above average group and one in the below average group--because such an analysis is so time consuming. This type of analysis serves as an explanatory model that contains rules which enable a child to generate sentences.

1.42 Review of Transformational Theory. Linguistic analysis of children's language has been concerned mostly with the acquisition of sounds, words, and sentences in a time sequence. The recent structural studies, as cited earlier, have been concerned with the syntactic slots of a sentence and what can fill these slots. Lees²¹ states that the traditional linguistic description has been based on two main tasks. He summarizes this viewpoint by saying:

The linguist has correctly accepted the two main tasks of linguistic research as (1) to give analysis of sentences and (2) to give criteria for these analyses.... By analysis he [the linguist] usually understands "dissection" into simple additive

segments and by "criteria" he usually means "recipes for segmentation."²²

In his description of English nominalization Lees prefers to use Chomsky's transformational theory because he cannot accept the limitations imposed upon the investigator by these definitions of "analysis" and "criteria." He explains his understanding of the purpose of "analysis" and "criteria" which serve as the basic goals for a transformational theory:

We take "analysis" in linguistics to mean the assignment of grammatical structures to sentences, no matter how abstractly these structures may have to be formulated.... We understand "criteria of analysis" to refer to the constraints which we hope to be able to impose on an explanatory linguistic theory.²³

Thus transformational theory enables the linguist to add a new level of analysis by assignment of underlying grammatical structures to the sentences. The linguist is no longer constrained by a segmentation type description, but can deal with rules which explain the overall grammatical structure of the sentence.

In this paper Chomsky's view²⁴ of grammar as a system of rules which generate and control grammatical utterances will be followed. This grammar operates on three levels: (1) phrase structure rules, (2) transformational rules, and (3) morphophonemic rules. The phrase structure rules describe the kernal (non-transformed) sentences of the language--sentences such as:

| | |
|-----------------------|---------------------------|
| The windows are dirty | IVA 1-1, 25 ²⁵ |
| I have a book | IVA 1-1, 40 |
| I read books | IVA 1-2, 46 |
| She is watching | IVA 1-1, 26 |

The phrase structure rules entail certain obligations and allow certain options for the kernal sentences. The choice of tense, past or present, is an obligation in the structure of the verb.

John Pres write the letters ("John writes the letters.")

John Past write the letters ("John wrote the letters.")
 (added to indicate that the two units go together)

An example of an option is the choice of certain adverbials--location, time, and manner.

She took a dog
 She took a dog to the game
 She took a dog to the game yesterday
 (For additional explanation see the phrase structure rules on page 15.)

The transformational rules enable one to manipulate a sequence (string) of morphemes in order to produce various new structures: passive, questions, negation, conjunction, and embedded clauses.

Passive:

John past write the letters →
 1 2 3 4
The letters past be en write by John
 4 2 3 1

That is "John wrote the letters" becomes "The letters were written by John."

Yes/No Question:

The letters Past be en write by John →
 1 2 3
Past be the letters en write by John
 2 1 3

That is, "The letters were written by John" becomes "Were the letters written by John?"

The advantage of employing transformational rules is that one now has a systematic method of applying rules to explain sentences and no longer needs to rely on notional and imprecise terms and procedures to explain grammatical constructions. The morphophonemic rules turn the strings of morphemes into actual utterances.

The set of rules of a transformational grammar not only describes the structure of sentences, but also explains how one can generate new but grammatical sentences. Thus, one can examine the rules a speaker has internalized

to produce sentences and discover the stages of language development the individual has attained.

A transformational grammar can be described as an explanatory model because, as Chomsky²⁶ says, "It offers an explanation for the intuition of a native speaker." The abstract formulation of rules explains the grammatical structure necessary for well-formed sentences. Chomsky's explanatory theory can be described as a theory of language acquisition.

Clearly, a child who has learned a language has developed an internal representation of a system of rules that determine how sentences are to be formed, used, and understood ... We can say that the child has developed and internally represented a generative grammar.²⁷

Apparently his hypothesis is that the transformational rules are grammatical categories of the sentence structures and that a child learns these categories of the sentence structures, enabling him to form new sentences.

1.5 Justification. In the review of literature dealing with language development, it is obvious that language acquisition studies have been divided into several areas: articulation, sound discrimination, vocabulary growth, parts of speech, and sentence length. The results of these studies have been compared to the adult grammar. This is generally a prescriptive analysis which is tantamount to making judgments concerning how a child should talk rather than a descriptive analysis of his actual speech. In the area of sentence structure and grammatical units of children's language the results are limited to sentence length, often with the conclusion that as a child matures, his sentences contain increasingly complex structures. However, this appears to be an intuitive feeling, as little of the research has attempted to reveal what constitutes complexity.

There have, however, been descriptive linguistic studies in the area of

syntactic analysis. These studies have primarily used the slot-filler techniques to analyze the parts which comprise a sentence and what fills these slots. Several studies of the first two-word sentences of children point out that a child learns the structural "meaning" rather than the content meaning of the sentences. Studies of older children, first- through fifth-grade, reveal differences in what can fill the various slots.

As noted earlier, Lees found it necessary to utilize a new level of syntactic analysis to explain the structural meanings and categories of a sentence. Such an analysis involves the formulation of syntactic rules a speaker internalizes which enable him to generate sentences. Lees²⁸ states that "Perhaps that the most astounding aspect of human behavior upon which such a study might shed some light is the young child's ability to acquire in a short-time, and with no special tuition, complete mastery of an immensely complex apparatus for constructing and understanding grammatical sentences." Menyuk²⁹ did a study of nursery school and first grade children to ascertain whether it is possible to use Chomsky's transformational theory³⁰ to analyze the speech of children and discern various stages of development. By writing a unique grammar for the children, she was able to show the different stages of development. Her study indicates that a transformational grammar could adequately describe language ontogeny.

At the present time it is apparent that transformational analysis needs to be applied beyond the first grade level. As pointed out previously, one intuitively feels that as a child matures, structures of his sentences increase in complexity. There is a need to investigate to see how it increases in complexity. By using an explanatory model based upon a transformational grammar, one can determine the types of transformations used and measure the

increase in frequency of occurrence of the more "complex" generalized transformations.³¹

CHAPTER II

PROCEDURE

2.1 Collection of data. The corpus used for this study is part of a larger corpus collected by Engler and Hannah as part of a research project seeking norms for the speech of children.³² These investigators chose three elementary schools in Manhattan, Kansas, which were representative of the socio-economic strata of the community, and had teachers at each choose eight boys and eight girls from each of three grade levels--first, third, and fifth. Teachers were to choose subjects whom they considered subjectively to be "normal," who had no record of speech or hearing problem, and who ranged from 90-110 IQ on the Otis scale. At each school, two rooms equipped with hidden microphones were used for recording. The first room, called "holding room," was furnished with a table and sets of plastic toys. The second room, called "interview room," had a table, three chairs and a set of pictures from the Adult TAT test.³³ First, eight boys were brought from the first-grade classroom to the holding room and allowed to play with the toys and to converse. Then two of the boys were taken to the interview room, leaving six to converse in "free field." The two interviewees were shown the Adult TAT pictures and asked by one of the investigators to tell what they saw in the pictures or to tell a story based on the pictures. The TAT pictures were used because a pilot study indicated that they produce less anxiety and more speech than the pictures from the Blacky³⁴ or the CAT³⁵ tests. To minimize the role of the interviewer, TAT pictures were shown to two children at a time. The children were asked to discuss the pictures with each other. This required the interviewer merely to present the pictures, ask the children to

talk about them, and then remain out of the discussion as much as possible. The boys were allowed to converse for a period of ten minutes. Their conversation was taped by a recorder which was concealed from their sight so as not to inhibit or otherwise change their characteristic conversation. This procedure was repeated for the first-grade girls, third-grade boys and girls, and fifth-grade boys and girls in turn. The result was over thirty hours of tape of the speech of 144 children, half in a free field and half in a structured interview situation.

The tapes were played back and typed in standard orthography, without punctuation or capitalization, into manuscript form. Manuscripts were coded to correspond with the tapes and to indicate holding or interview, boys or girls, and grade level. This thesis is concerned exclusively with Manuscripts II A, B, C (interviews, boys, first-grade) and IV A, B, C (interviews, boys, third-grade) of the Engler/Hannah data. These data cover a population of 24 first-grade boys and 24 third-grade boys. Speakers were not identified, but typists were to indicate a change of speakers by starting a new line. Because in many respects the hesitation phenomena resembled terminal junctures phonologically and often coincided with them, segmenting the corpus on the basis of clause terminal junctures was impossible. In order to segment the corpus into discrete episodes, the analysts listened to the tapes while watching the manuscript, and whenever they heard a pause in the speech on the tape, they made a slash (/) at the corresponding place on the manuscript. Only those segments (material between two slashes) which consisted of a noun phrase and verb phrase were considered for analysis. This procedure of collecting the data is described in a forthcoming paper by Engler and Hannah.³⁶

2.2 The Transformational Grammar. A transformational grammar was written

for one interview and then expanded or corrected as necessary for the entire corpus, considered interview by interview. The transformational grammar for this thesis was based upon the work of Chomsky,³⁷ Lees,³⁸ Postal,³⁹ Smith,⁴⁰ and Roberts⁴¹ with necessary adjustments for this particular corpus. This grammar consists of phrase structure rules (PS) and transformational rules (T and GT). It should be noted that transformational theory has changed and advanced tremendously, particularly since 1964. The pre-1964 theory is used for this analysis because it has been used by many transformationalists to formulate the rules for English, making copious examples available. Further, the earlier theory is now being used for textbooks of English grammar and thus is likely to be familiar to more people. Incidentally, the choice of pre-1964 theory will also tend to make this study somewhat comparable to that of Menyuk.⁴²

2.3 Restrictions of the Grammar. Since a complete transformational description of an extensive corpus is so complicated and lengthy⁴³ as to be almost unintelligible to the lay person, this grammar has been restricted. Some of the rules have been omitted because as yet the structures have not been analyzed by the authorities on transformational grammar. The author has restricted the rules to the ones which are most easily understood by the layman and are most essential to the analysis of the corpus. A complete list of structures which have been omitted can be found in the Appendix.

To simplify the analysis and the grammar, many of the rules governing co-occurrence restrictions have been omitted. This grammar is capable of generating the sentences in the corpus, but will allow others which are not grammatical since the co-occurrence restrictions⁴⁴ have been omitted. In addition these rules will result only in structured strings since the

morphophonemic rules have not been written.

2.4 The Grammar. The following is an explanation of the symbols used in the phrase structure rules and transformational rules: { } means that you must choose one of the elements, () means that the unit is optional, [] means that you must choose an equivalent element in the following set of [], and \rightarrow means "rewritten as."

Examples:

$\begin{Bmatrix} A \\ B \end{Bmatrix}$ (C) (D) will give you the following choices: ACD, AC, AD, A, BCD, BC, BD, or B.

$\begin{Bmatrix} A \\ B \\ C \end{Bmatrix} + \begin{Bmatrix} X \\ Y \\ Z \end{Bmatrix}$ will give you the following choices: AX, BY, or CZ.

2.41 Phrase Structure.

1. $S \rightarrow NP + VP$
2. $VP \rightarrow Aux \begin{Bmatrix} Be + Subst \\ Verbal \end{Bmatrix} (Loc) (Tm)$
3. $Aux \rightarrow Tense (M) (have + en) (be + ing)$
4. $Tense \rightarrow \begin{Bmatrix} Present \\ Past \end{Bmatrix}$
5. $Subst \rightarrow \begin{Bmatrix} NP \\ (Intens) Adj \end{Bmatrix}$
6. $Verbal^{43} \rightarrow \begin{Bmatrix} VI \\ VT + NP \\ Vh + NP \\ Vs + Adj \end{Bmatrix} (Man)$
7. $VI \rightarrow \begin{Bmatrix} Vi_1 \\ Vi_2 + Comp \end{Bmatrix}$
8. $VT \rightarrow \begin{Bmatrix} V_t \\ V_x + P \\ V_T + Comp \end{Bmatrix}$

9. Loc⁴⁴ → $\left\{ \begin{array}{l} \text{Adv}_{\text{Loc}} \\ \text{P}_{\text{Loc}} + \text{NP} \end{array} \right\}$
10. Tm → $\left\{ \begin{array}{l} \text{Adv}_{\text{Tm}} \\ \text{P}_{\text{Tm}} + \text{NP} \end{array} \right\}$
11. Man → $\left\{ \begin{array}{l} \text{Adj} + \text{ly} \\ \text{P}_{\text{Man}} + \text{NP} \end{array} \right\}$
12. NP → $\left\{ \begin{array}{l} \text{Proper Noun} \\ \text{Personal Pronoun} \\ \text{Indefinite Pronoun} \\ \text{Det} + \text{Noun} \end{array} \right\}$
13. Det → (Pre Art) ($\left\{ \begin{array}{l} \text{Art} \\ \text{Demon} \end{array} \right\}$) (Numeral)
14. Art → $\left\{ \begin{array}{l} \text{Def} \\ \text{Nondef} \end{array} \right\}$
15. Numeral → (Cardinal) (Ordinal)
16. Noun → $\left\{ \begin{array}{l} \text{Ncount} + \text{Number} \\ \text{N}_m \end{array} \right\}$
17. Number → $\left\{ \begin{array}{l} \text{Singular} \\ \text{Plural} \end{array} \right\}$

Lexical items in alphabetical order:

Adj → pretty, soft, slow...

Adv_{Tm} → yesterday, now, then...

Cardinal → first, second, third...

Demon → this, these, that, those

Def → the

Indefinite Pronoun → $\left\{ \begin{array}{l} \text{Some} ___ \\ \text{any} ___ \\ \text{no} ___ \\ \text{every} ___ \end{array} \right\} + \left\{ \begin{array}{l} ___ \text{thing} \\ ___ \text{one} \\ ___ \text{body} \end{array} \right\}$

Intens → awful, very...

M → may, can, will...

N_m → butter, sand...

Ncount → letter, boy, stick...

Nondef → a, some, Ø

Ordinal → one, two, three...

P → after, at, before, for...

P_{Loc} → at, in, on...

P_{Man} → with, along...

P_{Tm} → during, after, before...

Personal Pronoun → he, she, it, you, they, we, I

Pre Art → lots of, some of

Proper Noun → John, Bill, Mary...

Vh → have

Vi₁ → hear, ran, go...

Vi₂ → enjoy, happen...

Vs → seem, appear...

Vt → allow, order, find...

V_T → continue, expect, begin...

V_x → line, turn...

2.42 Transformational Rules.

T1 Passive → SD: NP Aux Vt NP X (X = anything or nothing)
Opt'l → x₁ x₂ x₃ x₄ x₅

SC: x₁ x₂ x₃ x₄ x₅ → x₄ x₂ Be + en x₃ x₅ (by + x₁)

Example: Someone could have killed him → He could have been killed

Source: Chomsky, Noam. Syntactic Structures: 'SGravenhage: Mouton and Co. p. 112.⁴⁷

T2 Ob-Sep → SD: X V_x P Personal Pronoun Y (X and Y = any-
Obligatory → x₁ x₂ x₃ x₄ x₅ thing or nothing.)

SC: x₁ x₂ x₃ x₄ x₅ → x₁ x₂ x₄ x₃ x₅

Example: She threw away them → She threw them away

Source: Chomsky, op. cit. p. 112.

T3 Op-Sep → SD: X V_x P NP Y
Optional → x₁ x₂ x₃ x₄ x₅

SC: x₁ x₂ x₃ x₄ x₅ → x₁ x₂ x₄ x₃ x₅

Example: You line up these people → You line these people up
 Source: Chomsky, op. cit., p. 112.

T4 Adv. insertion → SD: NP Tense {Be subst} (Loc) (Tm)
Optional → x₁ x₂
 {Verbal}

SC: x₁ x₂ → x₁ Adv_x x₂

Adv = always, only, already, still, just, probably, about

Example: He comes → He just comes

Source: T4 and T5 were written to cover this type of construction which appeared in the corpus. Max Smith advised on type of rule to use.

T5 Adv. insertion 2 → SD: NP Tense (M) Be + ing {VI} X
Optional → NP Tense (M) have + en {VI} X
 x₁ x₂ x₃
 {VT}

SC: x₁ x₂ x₃ → x₁ x₂ Adv_x x₃

Example: I am going home → I am always going home

I have played football → I have always played football

Source: Same as T4.

T6 Adv. initial → SD: NP Aux {Be + Subst} (Loc) (Tm)
Optional → x₁ x₂ x₃ x₄
 {Verbal}

SC: x₁ x₂ x₃ x₄ → (x₄) (x₃) x₁ x₂

Example: I shot two birds at home yesterday → Yesterday at home I shot two birds.

Source: Same as T4.

T7 Negation → SD: NP Tense Verbal X
Optional → NP Tense M X
 NP Tense have X
 NP Tense Be X
 x₁ x₂ x₃

SC: x₁ x₂ x₃ → x₁ x₂ neg x₃

Example: I can't go → I can't either

Source T9, T10, T11: Lees, R. B., "The Grammar of English Nominalizations," International J. of Am. Ling., 26:3 (1960), p. 42.

T12 yes/no ques. → SD: NP Tense Verbal X
Optional → NP Tense M X
 NP Tense have X
 NP Tense Be X
 $x_1 \quad x_2 \quad x_3$

SC: $x_1 x_2 x_3 \rightarrow x_2 x_1 x_3$

Example: He has eaten the candy → Has he eaten the candy

Source: Chomsky, op. cit., p. 112.

T13 Information Question → SD: X NP Y (X or Y may be null)
Optional → $x_1 \quad x_2 \quad x_3$

SC: $x_1 x_2 x_3 \rightarrow wh \quad x_1 \quad x_3$

Example: He ate candy → What did he eat
 Who ate the candy

T14 Where Ques. → SD: X Loc Y
Optional → $x_1 \quad x_2 \quad x_3$

SC: $x_1 x_2 x_3 \rightarrow where \quad x_1 \quad x_3$

Example: The book is here → Where is the book

T15 When Ques. → SD: X T_m Y
Optional → $x_1 \quad x_2 \quad x_3$

SC: $x_1 x_2 x_3 \rightarrow when \quad x_1 \quad x_3$

Example: I want the book now → When do I want the book

Source T13, T14, T15: Chomsky, op. cit., p. 112.

T16 Expletive 1. → SD: Det noun Tense Be Loc
Optional → $x_1 \quad x_2 \quad x_3$

SC: $x_1 x_2 x_3 \rightarrow There \quad x_2 \quad x_1 (x_3)$

Example: The house is there → There is the house

T17 Expletive 2 → SD: Det Noun Tense Be ing {V₁ } X
Optional → $x \quad x \quad \underline{\quad \quad \quad \{V_t\} \quad x}$

SC: $x_1 x_2 x_3 \rightarrow There \quad x_2 \quad x_1 \quad x_3$

Example: Some clowns are watching us → There are some clowns watching us

Source: After suggestions from Max Smith, the investigator wrote these two rules. Another rule must be written for the passive that is transformed into an expletive, but since this construction is not in the corpus, it has not been included in the grammar.

- T18 Reflexive → SD: NP Aux V_t NP
Optional → x x x
- SC: $x_1 x_2 x_3 \rightarrow x_1 x_2 x_3 \text{ self}$
- Condition: x_1 and x_3 have same referent.
 x_3 is a personal pronoun

Example: He hit him → He hit himself

Source: Postal, P. M. "Underlying and Superficial Linguistic Structures," Harvard Ed. Rev: 34:246-266 (1964).

- T19 Imperative → SD: You Tense M {Be Subst} X
Optional → x_1 x_2 x_3 Verbal
- SC: $x_1 x_2 x_3 \rightarrow (x_1) x_3$

Example: You will shut up → Shut up

Source: Postal, P. M., op. cit.

- T20 Imperative Neg → SD: You Tense M neg {Be Subst} X
Optional → x_1 x_2 x_3 x_4 x_5 Verbal
- SC: $x_1 x_2 x_3 x_4 x_5 \rightarrow (x_1) x_2 x_4 x_5$

Example: You will not be silly → don't be silly

It should be pointed out that a later transformation will change tense + neg to don't.

Source: This rule was constructed from the evidence in the corpus by the investigator in compliance with suggestions from Max Smith.

- GT1 Conjunction → SD: S1: NP VP
Optional → x_1 x_2
- S2: NP VP
 x_3 x_4
- SC: $x_1 x_2 x_3 x_4 \rightarrow x_1 x_2$ {for
and
but
or
nor
yet} $x_3 x_4$

Example: I play kickball → I play kickball and I play dodgeball
 I play dodgeball

GT2 So-that Conj → SD: S1, NP Aux $\left\{ \begin{array}{l} \text{VT + NP} \\ \text{VI} \\ \text{Be + Subst} \end{array} \right\} X$
Optional $\xrightarrow{\quad}$
 $x_1 \qquad \qquad \qquad x_2$

S2, $\frac{\text{NP}}{x_3} \text{ Aux } \frac{\text{Be}}{x_4} \text{ Adj}$

SC: $x_1 x_2 : x_3 x_4 \rightarrow x_3 \text{ so } x_4 \text{ that } x_1 x_2$

Example: They ran away → They were so tired that they ran away
 They were tired

GT3 Either/or conj → SD: S1, $\frac{\text{NP}}{x_1} \frac{\text{Tense + Be}}{x_2} \frac{\text{ing + VI}}{x_3} X$
Optional $\xrightarrow{\quad}$

S2, $\frac{\text{NP}}{x_4} \frac{\text{Tense + Be}}{x_5} \frac{\text{ing + VI}}{x_6} X$
 x_7

SC: $x_1 x_2 x_3 : x_4 x_5 x_6 x_7 \rightarrow x_1 + \text{either} + x_2 +$
 $\text{or} + x_6 x_7$

Example: She's thinking → She's either thinking or
 She's wondering about something wondering about something
 Source: Alexander

GT4 Compound NP → SD: S1, X NP Y
Optional $\xrightarrow{\quad}$
 $x_1 x_2 x_3$

S2, X NP Y
 $x_4 x_5 x_6$

SC: $x_1 x_2 x_3 : x_4 x_5 x_6 \rightarrow x_1 x_2 \left\{ \begin{array}{l} \text{yet} \\ \text{for} \\ \text{and} \\ \text{but} \\ \text{or} \\ \text{nor} \end{array} \right\} x_5 x_3$

Condition: either $x_1 = x_4$ or $x_3 = x_6$

Example: I play kickball → I play kickball and dodgeball
 I play dodgeball

Source: Max Smith

GT5 Compound VP
Optional →

SD: S1, X $\begin{Bmatrix} \text{Tense} \\ \text{ing} \\ \text{en} \\ \text{Tense M} \end{Bmatrix}$ $\begin{Bmatrix} V_{i1} \\ V_{i2} \\ V_t \\ V_x \\ V_T \end{Bmatrix}$ Y

x_1 x_2 x_3

S2, X $\begin{Bmatrix} \text{Tense} \\ \text{ing} \\ \text{en} \\ \text{Tense M} \end{Bmatrix}$ $\begin{Bmatrix} V_{i1} \\ V_{i2} \\ V_t \\ V_x \\ V_T \end{Bmatrix}$ Y

x_4 x_5 x_6

SC: $x_1 x_2 x_3 : x_4 x_5 x_6 \rightarrow x_1 x_2 \begin{Bmatrix} \text{for} \\ \text{and} \\ \text{but} \\ \text{or} \\ \text{nor} \\ \text{yet} \end{Bmatrix} x_5 x_3$

Condition: either $x_1 = x_4$ or $x_3 = x_6$

Example: It is raining outside → It is raining and snowing
It is snowing outside outside

Source: Max Smith

GT6 Conj del M
Optional →

SD: X Tense M $\begin{Bmatrix} V_{i1} \\ V_{i2} \\ V_t \\ V_x \\ V_T \end{Bmatrix}$ and Tense M $\begin{Bmatrix} V_{i1} \\ V_{i2} \\ V_t \\ V_x \\ V_T \end{Bmatrix}$ Y

x_1 x_2 x_3 x_4 x_5 x_6 x_7

SC: $x_1 x_2 x_3 x_4 x_5 x_6 x_7 \rightarrow x_1 x_2 x_3 x_4 x_6 x_7$

Example: I may go and may stay all night → I may go and stay all
night

Source: Max Smith

GT7 Subordinate Cl
Optional →

SD: S1, NP VP
 x_1 x_2

S2, X NP Y
 x_3 x_4 x_5

SC: $x_1 x_2 : x_3 x_4 x_5 \rightarrow x_3 \begin{Bmatrix} \text{what} \\ \emptyset \\ \text{that} \end{Bmatrix} x_1 x_2$

Example: It is a pretty good one → I think it is a pretty good one
I think something

Source: Mary Alexander

GT8 Inversion Sub Cl
Optional → SD: NP Tense V_t ∅ NP VP
 $x_1 \quad x_2 \quad x_3 \quad x_4 \quad x_5$
 SC: $x_1 x_2 x_3 x_4 x_5 \rightarrow x_3 x_4 x_5 x_1 x_2$
 Example: I think it is a pretty good one → It is a pretty good one
 I think
 Source: Mary Alexander

GT9 When clause
Optional → SD: S1, NP + Aux + VI + Tm
 VT + NP
 $x_1 \quad x_2 \quad x_3$
 S2, NP Aux VT Z
 VI
 $x_4 \quad x_5 \quad x_6$
 SC: $x_1 x_2 x_3 : x_4 x_5 x_6 \rightarrow x_4 x_5 x_6 \text{ 'when } x_1 x_2 (x_3) \text{ '}$
 when $x_1 x_2 (x_3) x_4 x_5 x_6$
 Example: He gets here today → { I want to leave when he gets here }
 I want to leave { When he gets here, I want to leave }
 Source: Mary Alexander

GT10 Nom V_T ing
 Vi₂
Optional → SD: S1, NP Aux Be Subst X
 Verbal
 $x_1 \quad x_2 \quad x_3$
 S2, NP Aux V_T Comp
 Vi₂
 $x_4 \quad x_5$
 SC: $x_1 x_2 x_3 : x_4 x_5 \rightarrow x_4 \text{ ing} + x_2 x_3$

Example: They run to catch her → They start running to catch her
 They start + Comp
 Source: Mary Alexander

GT11 Verb ing Prep.
Optional → SD: S1, NP Aux Vi₂ X
 V_T
 $x_1 \quad x_2$
 S2, X P NP
 $x_3 \quad x_4 \quad x_5$
 SC: $x_1 x_2 : x_3 x_4 x_5 \rightarrow x_3 x_4 \text{ ing} + x_2$

Example: He is climbing a tree → Randy told about climbing a tree
 Randy told about it
 Source: Mary Alexander

GT12 Nom Vi₂ to
Optional →

SD: S1, NP Aux $\begin{Bmatrix} V_t \\ V_h \\ V_{i1} \end{Bmatrix}$ X

$\frac{x_1 \quad x_2 \quad x_3}{\quad}$

S2, NP Aux Vi₂ Comp X
 $\frac{\quad \quad \quad V_T}{x_4 \quad x_5 \quad x_6}$

SC: $x_1 x_2 x_3 : x_4 x_5 x_6 \rightarrow x_4 \text{ to } + x_2 x_3 x_6$

Example: I go past one house → I get to go past one house
 I get Comp

They slept → They went to sleep
 They went Comp
 Source: Mary Alexander

GT13 V_T Comp NP
Optional →

SD: S1, NP Aux $\begin{Bmatrix} \text{Be Subst} \\ \text{Verbal} \end{Bmatrix}$ X

$\frac{x_1 \quad x_2 \quad x_3 \quad x_4}{\quad}$

S2, NP Aux V_T Comp NP
 $\frac{\quad \quad \quad V_T}{x_5 \quad x_6 \quad x_7}$

SC: $x_1 x_2 x_3 x_4 : x_5 x_6 x_7 \rightarrow x_5 \text{ to } + x_3 x_4 x_7$

Example: I fish → He taught to fish me
 He taught comp me
 Source: Lees, op. cit., p. 62.

T21 V_T Comp NP
Obligatory →

SD: NP Aux V_T Comp NP
 $\frac{\quad \quad \quad V_T}{x_1 \quad x_2 \quad x_3}$

SC: $x_1 x_2 x_3 \rightarrow x_1 x_3 x_2$

Example: He taught to fish me → He taught me to fish
 Source: Lees, op. cit., p. 62.

T22 V_T Comp NP
Obligatory →

SD: NP Aux V_T to Verbal
 $\frac{\quad \quad \quad V_T}{x_1 \quad x_2 \quad x_3}$

SC: $x_1 x_2 x_3 \rightarrow x_1 x_3$

Condition: V_T = verbs like make, let, get

Example: You make me to laugh → You make me laugh
 Source: Lees, op. cit., p. 63.

GT14 Possessive
Optional →

SD: S1, NP Aux have Det + Noun
 x_1 x_2

S2, X the Noun Y
 x_3 x_4 x_5

SC: $x_1 x_2 : x_3 x_4 x_5 \rightarrow x_3 x_1 + \text{Pos } x_5$

Condition: Noun in S1 = Noun in S2

Example: She has a head → She turned her head
 She turned the head

Source: Roberts, Paul. English Syntax, Harcourt Brace World, New York, 1964. p. 399.

GT15 Pos--ing
Optional →

SD: NP Aux $\left\{ \begin{array}{l} V_t \\ V_{i1} \\ V_h \end{array} \right\} Y$
 x_1 x_2 x_3 x_4

S2, X NP Y
 x_5 x_6 x_7

SC: $x_1 x_2 x_3 x_4 : x_5 x_6 x_7 \rightarrow x_5 x_1 + \text{Pos ing} + x_3 x_4 x_7$

Example: He reads → His reading is terrible
 It is terrible

Source: Roberts, op. cit., p. 402.

GT16 Relative
Optional →

SD: S1, X NP Y
 x_1 x_2 x_3

S2, W NP Z
 x_4 x_5 x_6

SC: $x_1 x_2 x_3 : x_4 x_5 x_6 \rightarrow x_4 x_5 \left\{ \begin{array}{l} \text{that} \\ \text{who} \\ \text{which} \end{array} \right\} x_1 x_3 x_6$

Condition: $x_2 = x_5$

XYWZ = anything or nothing

Example: You hit things → Those things that you hit
 Those things are putters are putters

Source: Roberts, op. cit., p. 400.

GT17 Appositive
Optional →

SD: S1, NP Aux Be NP
x₁ x₂ x₃

S2, Y NP Z
x₄ x₅ x₆

SC: x₁ x₂ x₃ : x₄ x₅ x₆ → x₄ x₅ x₃ x₆

Condition: x₁ = x₅ and Y or Z may be null.

Example: Susan is my aunt → Susan, my aunt, is here
Susan is here

Source: Mary Alexander

GT18 Comparative -er than
Optional →

SD: S1, NP Aux Be Adj
x₁ x₂ x₃

S2, NP Aux Be Adj
x₄ x₅ x₆

SC: x₁ x₂ x₃ : x₄ x₅ x₆ → x₁ x₂ x₃ + er
than x₄ (x₅)

Example: John is tall → John is taller than Bill (is)
Bill is tall

Source: Smith, Carlota, "A Class of Complex Modifiers in English,"
Language, 37:342-365.

GT19 Comparative as--as
Optional →

SD: S1, NP Aux Be Adj
x₁ x₂ x₃

S2, NP Aux Be Adj
x₄ x₅ x₆

SC: x₁ x₂ x₃ : x₄ x₅ x₆ → x₁ x₂ as x₃ as
x₄ (x₅)

Example: John is tall → John is as tall as Bill (is)
Bill is tall

Source: Roberts, Paul. The Roberts English Series: A Linguistic
Program, Teachers ed., New York, 1966.

GT20 Nom Comp V₁ with
Optional →

SD: S1, NP Tense V₁ with Det Noun
x₁ x₂ x₃ x₄ x₅ x₆

S2, X Noun Y
x₇ x₈ x₉

SC: x₁ x₂ x₃ x₄ x₅ x₆ : x₇ x₈ x₉ → x₇ x₅ x₆
x₃ + er x₉

Example: She sits with the baby → She is the baby sitter
 She is someone
 Source: Lees, op. cit., p. 127.

GT21 Nom Comp Subj-Pred → SD: S1, Det Noun Tense Be Det Noun
Optional x_1 x_2 x_3 x_4 x_5
 S2, X Noun Y
 x_6 x_7 x_8
 SC: $x_1 x_2 x_3 x_4 x_5 : x_6 x_7 x_8 \rightarrow x_6 x_2 x_5$

Condition: $x_5 = x_7$

Example: The girl is a friend → She is a girl friend
 She is a friend
 Source: Lees, op. cit., p. 84.

T23 Descriptive Adj → SD: X Noun {who (N)} Tense Be Adj Y
Optional {which
 that}
 x_1 x_2 x_3 x_4 x_5 x_6
 SC: $x_1 x_2 x_3 x_4 x_5 x_6 \rightarrow x_1 x_5 x_2 x_6$

Example: The child who is pretty is here → The pretty child is here
 Source: Lees, op. cit., p. 89-98. There is an intermediate
 theoretical step which would give The child pretty is here
 but the intermediate step seems unnecessary for this corpus.

T24 Nom Mod -ing → SD: X Det + Noun {that} Tense {Be} + Subst Y
Optional {who (P)}
 {which} {VI}
 x_1 x_2 x_3 x_4 x_5 x_6 x_7
 SC: $x_1 x_2 x_3 x_4 x_5 x_6 x_7 \rightarrow x_1 x_2 x_3 \text{ ing} + x_5 x_6$

Example: I saw a child who cried hard → I saw a child crying hard
 Source: Lees, op. cit., p. 93.

T25 Nom Mod -ing → SD: NP Aux V_t Det + Noun ing VT
Obligatory x_1 x_2 x_3 x_4 VI
 SC: $x_1 x_2 x_3 \rightarrow x_1 x_2 x_4 x_3$

Example: I saw a child crying → I saw a crying child
 Source: Lees, op. cit., p. 93.

T26

AffixObligatory →

SD: X Tense $\left\{ \begin{array}{l} \text{Be} \\ \text{Have} \\ \text{M} \\ \text{Vs} \\ \text{Vt} \\ \text{Vx} \\ \text{VT} \\ \text{Vi}_1 \\ \text{Vi}_2 \end{array} \right\} \text{Y}$

$x_1 \quad x_2 \quad x_3 \quad x_4$

SC: $x_1 x_2 x_3 x_4 \rightarrow x_1 x_3 x_2 x_4$

SD: X ing $\left\{ \begin{array}{l} \text{Be} \\ \text{Vs} \\ \text{Vt} \\ \text{Vx} \\ \text{VT} \\ \text{Vi}_1 \\ \text{Vi}_2 \end{array} \right\} \text{Y}$

$x_1 \quad x_2 \quad x_3 \quad x_4$

SC: $x_1 x_2 x_3 x_4 \rightarrow x_1 x_3 x_2 x_4$

SD: X en $\left\{ \begin{array}{l} \text{Be} \\ \text{Vs} \\ \text{Vt} \\ \text{Vx} \\ \text{VT} \\ \text{Vi}_1 \\ \text{Vi}_2 \end{array} \right\} \text{Y}$

$x_1 \quad x_2 \quad x_3 \quad x_4$

SC: $x_1 x_2 x_3 x_4 \rightarrow x_1 x_3 x_2 x_4$

Source: Lecture presented by Max Smith in Fall 1965.

T27

DoObligatory →

$\left\{ \begin{array}{l} \text{Present} \\ \text{Past} \end{array} \right\} \rightarrow \left\{ \begin{array}{l} \text{do} \\ \text{did} \end{array} \right\} \text{ in } \text{---} \left\{ \begin{array}{l} \text{NP} \\ \text{neg} \\ \text{A} \end{array} \right\}$

Example: Tense NP V_t NP

Do you want the book

Source: *Max Smith. It should be noted that this is a phonological statement but it seemed necessary to clarify some of the rules requiring do in the position of tense.

T28 Subject deletion SD: NP Tense V₁ P NP
Optional x₁ x₂

SC: x₁ x₂ → x₂

Example: That man looks like an Indian → Looks like an Indian

Condition: In this corpus this transformation occurred only with looks like when the children were talking about the pictures. It has been included because a variety of constructions followed the preposition like.

T29 Noun deletion SD: X { Cardinal } Noun Y
Optional x₁ x₂ x₃ x₄

SC: x₁ x₂ x₃ x₄ → x₁ x₂ x₄

Example: I like that picture → I like that
 Source: Alexander

2.5 Tabulation. Chomsky⁴⁸ defines a sentence as a S → NP + VP and he states that the native speaker intuitively knows what a sentence is. This eliminates consideration of aberrant sentences, stops and starts, and incomplete sentences. No doubt there is a wealth of information to be found in aberrant and incomplete sentences, but this would be a study in itself. The author has limited this study to an analysis of complete sentences. The cards of the sentences of each boy were analyzed. Henceforth, the cards will be noted by the Engler-Hannah⁴⁹ code: IIA, 1-1 means male, first grade, school A, interview 1, boy 1: IIA, 2-2 means male, first grade, school A, interview two, boy two. On each card the sentence was analyzed by noting what transformations were used. These transformations were then tabulated for each boy. Tables were then prepared to indicate the frequency of occurrence for each transformation and its percentage of the total corpus for each grade. The percentage was derived from the number of times used by all the boys of each grade divided by the total number of sentences used (873 sentences in the first grade and 946 sentences in the third grade).

CHAPTER III

RESULTS

3.1 Introduction. This chapter is concerned with the frequency and percentage of usage of the transformations found in the speech of twenty-four first and twenty-four third-grade boys. The results will be discussed in two sections: those based upon single base (sentence) transformations (T1, T2, etc.) and double base (sentence) generalized transformations (GT1, GT2, etc.). The rules discussed are referred to by the name given them in the grammar (pages 17-30). The tables are based upon the results of the tabulation of sentences from manuscripts II A, B, C and IV A, B, C of the Engler-Hannah study.⁴⁹ The usage by individual boys may be found in the appropriate table in the Appendix.

3.2 Single Base Transformations. In the material examined eleven single base transformations were tabulated.

Table 1. Frequency and percentage of occurrence of single base transformational rules.

| Transformations | First Grade Boys | | Third Grade Boys | |
|----------------------|------------------|--------|------------------|--------|
| | Frequency used | % used | Frequency used | % used |
| Passive | 2 | .2 | 7 | .7 |
| Particle separation | 8 | .9 | 7 | .7 |
| Adverb | 83 | 9.5 | 160 | 16.9 |
| Negation | 95 | 10.9 | 90 | 9.5 |
| Affirm | 2 | .2 | | |
| Tag answers | 18 | 2.2 | 7 | .7 |
| Yes/no question | 15 | 1.7 | 19 | 2.0 |
| Information question | 23 | 2.6 | 24 | 2.5 |
| Expletive | 45 | 5.2 | 51 | 5.4 |
| Imperative | 26 | 3.0 | 30 | 3.2 |
| Reflexive | 2 | .2 | 2 | .2 |

The results reveal that the first grade boys used five of the single

base transformations more frequently than the third grade boys. These transformations were particle separation (T2), negation (T7), affirm (T8), tag answers (T9, T10, T11) and information questions (T13, T14, T15).

| | | First grade | Third grade |
|-------------------------------------|-------------|-------------|-------------|
| I <u>opened</u> it <u>up</u> | IVA 4-2, 49 | .9% | .7% |
| She <u>doesn't</u> work | IIC 1-1, 22 | 10.9 | 9.5 |
| I <u>do</u> watch Sea Hunt everyday | IIA 2-1, 13 | .2 | 0.0 |
| I can <u>too</u> | IIC 1-1, 24 | 2.2 | .7 |
| <u>What's</u> that | IVA 3-1, 34 | 2.6 | 2.5 |

The tabulation of the affirm (T8) transformation as limited to sentences which used a verbal, not have or be, requiring do to receive the emphasis as in I do watch Sea Hunt everyday. Because the investigator worked with the manuscript, it was impossible to tabulate the sentences with the affirm transformation which relied on stress. The affirm transformation was limited to verbals and did not include any other type of structure. This may account for the fact that there is no usage of the affirm (T8) in the speech of third grade boys.

The third grade boys used the following single base transformations more frequently than did the first grade boys: passive (T1), adverb insertion (T4, T5, T6), yes/no question (T12), expletive (T16, T17) and imperative (T19, T20).

| | | First grade | Third Grade |
|-----------------------------------|-------------|-------------|-------------|
| He <u>could have been</u> killed | IVA 2-1, 33 | .2% | .7% |
| She <u>always</u> babysits | IIC 1-1, 12 | 9.5 | 16.9 |
| <u>On Saturday</u> she works | IIC 1-1, 23 | 4.1 | 10.1 |
| <u>Is</u> that a river back there | IVA 2-1, 3 | 1.7 | 2.0 |
| <u>Talk</u> about these | IVA 3-1, 17 | 3.0 | 3.2 |
| <u>There's</u> a tree | IVA 2-1, 5 | 5.2 | 5.4 |

The adverbs of time and location had two positions, initial and post-verb. One type of verb (adv_x in rule T5) sometimes referred to as "adverbs of frequency," could be inserted directly before the finite form of the verb (e.g. She always babysits). Both the first grade and third grade boys used

all three of the adverb transformations (T4, T5, T6), but the tabulations reveal that the third grade boys employed these transformations more frequently than the first grade boys.

| | First grade | Third grade |
|----------------------|-------------|-------------|
| Adverb + NP + VP | 4.1% | 10.1% |
| NP + Adverb + VP | 1.3 | 4.1 |
| NP + Aux Adverb + VT | 2.7 | 2.7 |
| VI | | |

3.3 Generalized Transformations. As noted in the review of literature, most investigations revealed that as a child matures, his language increases in complexity. This complexity can be illustrated by analyzing the usage of the generalized (two base sentence) transformations. With the exception of the passive (T1), the third grade boys used all the generalized transformations, which were tabulated, more frequently than did the first grade boys.

Table 2. Frequency and percentage of occurrence of generalized transformations.

| Transformations | First Grade Boys | | Third Grade Boys | |
|-----------------------|------------------|--------|------------------|--------|
| | Frequency used | % used | Frequency used | % used |
| Coordinate Sentence | 104 | 11.9 | 141 | 14.9 |
| Compounds, NP, VP | 68 | 7.8 | 130 | 13.7 |
| Noun Clauses | 86 | 9.8 | 160 | 16.9 |
| Relative Clause | 8 | .9 | 42 | 4.4 |
| Adverb Clause | 27 | 3.1 | 39 | 4.1 |
| Subordinate Clause | 37 | 4.2 | 54 | 5.7 |
| Verb-comp-ing | 15 | 1.7 | 27 | 2.8 |
| Verb-Comp-to | 113 | 12.9 | 163 | 17.2 |
| Descriptive adjective | 65 | 7.4 | 73 | 7.7 |
| Compound Nominal | 72 | 8.2 | 87 | 9.2 |
| Possessive | 145 | 16.6 | 121 | 12.8 |
| Verb-ing, en, to | 6 | .7 | 22 | 2.3 |
| Appositive | | | 6 | .6 |
| Nominalization | 5 | .6 | 26 | 2.7 |
| Comparative | 5 | .6 | 6 | .6 |
| Poss-ing | | | 4 | .4 |

To aid the discussion of the results of the usage of the generalized transformations, the investigator has broken down the information into five

categories: (1) coordinate sentences and compound nouns and verbs, (2) clauses, (3) verb complements (infinitives, participles, and nouns), (4) modifiers, and (5) nominalizations.

3.31 Coordination. Types of coordination were used more frequently by third graders. The use of coordinate conjunctions to join two or more sentences ($S \rightarrow NP + VP$) was used 11.9% by first graders and 14.9% by the third graders. Nouns joined by coordinate conjunctions were found to appear 5.1% of the time in the speech of the first graders and 6.4% in the third-graders' speech. Verbs were joined by conjunctions 3.7% of the time by the first-graders and 6.9% by the third graders. The following are examples of these types of constructions:

1. They're either sleeping or they fell to the ground IVA 1-1, 13
2. That girl's going to school or something IVA 1-1, 8
3. It's raining or sleeting outside IVA 1-1, 8

3.32 Embedded Clauses. All types of embedded clauses were used more frequently by the third grade boys than by the first grade boys.

| | | |
|--------------------|--|-------------|
| Noun Clause | I think <u>it's a pretty good one</u> | IVA 1-1, 2 |
| Relative Clause | That's all <u>that I can think of</u> | IVA 1-1, 14 |
| Adverb Clause | I like to play football <u>when you get a whole bunch of guys together</u> | IVA 1-1, 37 |
| Subordinate Clause | I don't ever throw it <u>because it's got coaches' names all over it</u> | IVA 1-1, 20 |

As can be observed in Table 2, third-grade boys used the noun clause (GT6, GT7) in 16.9% of the sentences; the first-grade boys, 9.8%. The relative clause was used .9% by the first graders and 4.5% by the third graders. In this investigation adverb clauses were defined as those which are introduced by when, where, how, which appear to function as adverbs. Subordinate clauses were designated as those introduced by because, for, if, since, so, and after. Admittedly, many of the subordinate clauses are also adverbial in nature. From the data it appears that a thorough study needs to be made and

rules written for each type of subordinator.

If all the clause transformations (GT5, GT6, GT13, GT19) are combined, one can see that the third grade boys used them 40.7% in the total number of sentences and the first grade boys 22.7%. This is one indication of the increase in complexity of the structure of a sentence with maturation.

3.33 Verb Complements. The verb-complement structure is composed of three types of structures: (1) verb + to + verb (GT9), (2) verb + verb + ing (GT7), and (3) verb + noun + noun (GT10, T21, T22). The following sentences are examples of each type of complement:

| | |
|---|-------------|
| I like <u>to go</u> down to the park... | IVA 1-1, 39 |
| They brought her <u>to see</u> the doctor | IVA 1-1, 20 |
| It is starting <u>to fall</u> down | IIC 4-1, 6 |
| We can hardly see <u>going</u> up that hill | IVC 1-1, 25 |
| We don't call it <u>reading</u> | IIB 3-1, 16 |
| She is just sitting there <u>dreaming</u> | IIB 1-1, 10 |
| That's hard <u>to do</u> | IIB 3-2, 23 |
| That's the barn <u>to sleep in</u> | IIA 3-1, 14 |
| Call it <u>a lumber yard</u> | IIA 3-1, 12 |

The to + verb complement has the highest percentage of usage (12.9% for first grade boys and 17.2% for third-grade boys. An explanation for this could be that verbs like going to + verb, used to + verb, and have to + verb were included in this construction. Joos⁵⁰ classifies going to, used to, and have to as quasi auxiliaries. Since phrase structure rules generally do not deal with these structures, the investigator included them in the complement transformation (GT9). There needs to be further investigation to deal with the quasi auxiliaries more accurately in a transformational grammar.

3.34 Modifiers. The investigator classified the following constructions as modifiers:

| | | |
|-----------------------|--|-------------|
| Descriptive Adjective | It's a real <u>nice</u> day | IVC 1-1, 12 |
| Compound Nominal | We already got our <u>report</u> cards | IIC 3-1, 6 |
| Possessive | <u>My</u> teacher wants to call us | IIC 3-1, 18 |
| Verb-ing | The <u>fishing</u> boat's out by the light | IYA 4-2, 19 |

| | | |
|------------|--|-------------|
| Verb-en | Those are men <u>drunk</u> | IVA 4-2, 15 |
| Appositive | He threw it towards Jimmy, <u>the</u> <u>champion pitcher</u> | IVA 1-1, 54 |

Table 2 reveals that the third-grade boys used all these constructions except the possessive more frequently than the first-grade boys. The first-grade boys used the possessive 16.6% of the time while the third-grade boys used it only 12.8%. The third-grade boys used the appositive .6% while the first-graders did not use it at all.

Many of the modification structures were omitted from this study for various reasons: (1) some of the structures have not yet been formulated into rules by the authorities, and (2) some had so many co-occurrence restrictions that it was impractical to include them in the rules of the grammar. This is also an area which requires additional study. A list of the types of modification structures not included may be found in the appendix.

3.35 Nominalization. There were only two types of nominalizations tabulated, verb + ing (GT8) and Poss-ing (GT12). The following are examples:

| | |
|---|-------------|
| They go out <u>fishing</u> | IVA 4-2, 5 |
| I like to catch up on <u>my reading</u> about the Civil War | IVA 4-1, 19 |

The first-grade boys did not use the poss-ing (GT12) transformation in the data analyzed and the third-grade boys used it .4% of the time. The verb + ing (GT8) nominalization was used .6% of the time by first-graders and 2.7% by the third-grade boys.

3.4 Conclusion. The results reveal that the third-grade boys had a higher frequency of occurrence of the generalized transformations. This indicates that the sentence structure increases in complexity with maturation.

As with any study of this nature, it was discovered that more work needs to be done in refining the tools of analysis. Some suggestions for further study are (1) investigation of the verb-complement transformation and

(2) refinement of the rules governing modification structures. This investigation did not study the possibilities of expansions at the phrase structure level and it seems that this would explain the increase in sentence complexity, also.

APPENDIX

The following list is composed of examples from the corpus which have no phrase structure rules or transformational rules to explain their grammatical structures.

1. Postnominal prepositional phrases:

| | |
|---|-------------|
| I have a whole bunch <u>of books</u> | IVA 1-1, 18 |
| There's a book <u>on sea shells</u> | IVA 2-1, 16 |
| Daddy caught a fish <u>about like this</u> | IVA 3-1, 14 |
| My dad used the little fish <u>for bait</u> | IVA 3-1, 22 |
| The trees all look <u>like that</u> | IVA 4-1, 2 |

2. Prepositional phrases following some verbs:

| | |
|--|-------------|
| He's talking <u>about his brother</u> | IVA 1-1, 16 |
| They have to come out <u>in your place</u> | IVA 1-2, 24 |
| Haven't you ever heard <u>of kick ball</u> | IVA 1-2, 15 |
| I'm reading <u>about a dinosaur story</u> | IVA 1-2, 6 |
| He is just learning to walk <u>blind</u> | IVA 1-1, 53 |
| Our social studies was <u>on Indians</u> | IVA 2-1, 12 |
| It makes me feel <u>like Tuttle Creek</u> | IVA 3-1, 14 |
| It makes me think <u>of her</u> | IVA 3-1, 30 |
| Start acting <u>like a nut</u> | IVA 3-2, 38 |

3. Certain one word nominal modifiers:

| | |
|-------------------------------------|-------------|
| I have a <u>whole</u> book | IVA 1-1, 16 |
| The trees <u>all</u> look like that | IVA 4-1, 2 |
| Give it to somebody <u>else</u> | IVA 3-1, 34 |

Table I. Frequency and occurrence of usage of transformations of individual boys.

| Transformation | First grade boys | | | | | | | | | | Frequency | % | | | | | | | | | | | | | | | |
|----------------------------|------------------|----|----|----|----|-----------------|----|----|----|----|-----------|----|-----------------|----|----|----|----|----|----|----|----|----|-----|----|-----|------|-----|
| | II-A eight boys | | | | | II-B eight boys | | | | | | | II-C eight boys | | | | | | | | | | | | | | |
| Relative Clause | -- | -- | -- | -- | -1 | -- | -- | -- | -- | -- | -- | -2 | -2 | -- | -- | -- | -1 | -1 | 8 | .9 | | | | | | | |
| Adverb Clause | -2 | -3 | -1 | -2 | -- | -1 | -1 | -1 | -2 | -2 | -- | -- | -1 | -1 | -1 | -2 | -- | -3 | -1 | -2 | -1 | 27 | 3.1 | | | | |
| Subordinate Clause | -2 | -1 | -2 | -2 | -- | -- | -2 | -- | -3 | -1 | -- | -2 | -2 | -- | -4 | -2 | -- | -6 | -- | -4 | -- | 37 | 4.2 | | | | |
| Reflexive | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -1 | -- | -- | -1 | -- | -- | -- | -- | -- | -- | 2 | .2 | | | | |
| Possessive | -2 | -7 | -3 | -3 | -- | 10 | 11 | 10 | -3 | -3 | -4 | -9 | -4 | -5 | -6 | -9 | -8 | -9 | -8 | -5 | 10 | -2 | -9 | -5 | 145 | 16.6 | |
| Desc. Adj. | -3 | -3 | -4 | -- | -- | -2 | -4 | -3 | -3 | -2 | -1 | -5 | -4 | -- | -1 | -1 | -6 | -- | -4 | 11 | -1 | -5 | -- | -2 | 65 | 7.4 | |
| Modifier-ing | -- | -- | -- | -- | -- | -- | -- | -3 | -- | -1 | -- | -- | -- | -- | -- | -- | -1 | -- | -- | -- | -- | -- | -1 | -- | 6 | .7 | |
| Poss-ing | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Comparative | -2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -1 | -- | -- | -- | -- | -1 | -- | -- | -1 | -- | -- | -- | -1 | -- | 5 | .6 |
| Appositive | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| V Comp ing | -1 | -1 | -1 | -1 | -- | -- | -- | -2 | -- | -1 | -- | -- | -- | -- | -2 | -1 | -- | -2 | -1 | -- | -- | -- | -2 | -- | -2 | 15 | 1.7 |
| V Comp inf | -3 | -4 | -2 | -- | -1 | -6 | -- | -5 | 15 | -6 | -4 | -3 | -3 | -3 | -7 | -3 | -5 | -5 | -2 | -5 | 12 | -5 | -6 | -8 | 113 | 12.9 | |
| Comp. Nominal | -1 | -- | -2 | -3 | -4 | -2 | -7 | -- | -- | -6 | -5 | -- | -- | -3 | -3 | -- | -9 | -7 | -5 | -3 | -5 | -3 | -1 | -- | 72 | 8.2 | |
| Nominalization (ing to) | -- | -1 | -3 | -- | -- | -- | -- | -- | -- | -- | -- | -1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5 | .6 | |
| V Comp NP | -1 | -- | -- | -- | -- | -1 | -2 | -1 | -2 | -- | -- | -- | -- | -- | -- | -- | -- | -2 | -- | -- | -1 | -- | -- | -- | 10 | 1.1 | |

Table I continued.

| Table I continued. | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|-----------------|----|----|----|-----------------|----|----|----|-----------------|----|----|----|-----------|----|------|----|----|----|----|-----|----|----|----|----|-----|-------|
| Transformation | II-A eight boys | | | | II-B eight boys | | | | II-C eight boys | | | | Frequency | % | | | | | | | | | | | | |
| Passive | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2 | .2 | | | | | | | | | | | |
| Ob-Sep-Particle | -2 | -1 | -- | -- | -- | -- | -- | -- | -1 | -- | -- | -1 | -- | 8 | * .9 | | | | | | | | | | | |
| Adverb | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Initial | -5 | -5 | -6 | -- | -2 | -1 | -2 | -6 | -8 | -7 | -1 | -3 | -2 | -1 | -2 | -1 | -- | -1 | 83 | 9.5 | | | | | | |
| NP Adv VP | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NP Adv Adv | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Negation | -2 | -- | -6 | -5 | -7 | -6 | -9 | -2 | -2 | -3 | -3 | -4 | -2 | -5 | -4 | -3 | -4 | -6 | -5 | -3 | -5 | -4 | -2 | -3 | 95 | 10.9 |
| Affirm | -- | -- | -1 | -- | -- | -1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2 | * .2 |
| Either (50-700) | -- | -- | -- | -- | -- | -1 | -- | -1 | -- | -1 | -- | -- | -- | -- | -1 | -4 | -- | -3 | -- | -- | -1 | -2 | -3 | -1 | 18 | * 2.2 |
| Yes/no Question | -1 | -2 | -2 | -- | -1 | -3 | -1 | -1 | -- | -3 | -2 | -3 | -1 | -- | -1 | -- | -- | -2 | -- | -- | -1 | -- | -1 | -- | 15 | 1.7 |
| Information | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Question | -1 | -2 | -2 | -- | -1 | -3 | -1 | -1 | -- | -3 | -2 | -3 | -1 | -- | -1 | -- | -- | -- | -- | -2 | -- | -- | -- | -- | 23 | * 2.6 |
| Expletive | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (there/here) | -- | -5 | -1 | -4 | -2 | -1 | -- | -2 | -1 | -3 | -- | -3 | -2 | -5 | -2 | -- | -4 | -1 | -4 | -1 | -1 | -1 | -2 | -- | 45 | 5.2 |
| Imperative | -1 | -- | -- | -- | -4 | -1 | -- | -1 | -- | -1 | -2 | -3 | -- | -2 | -- | -1 | -- | -- | -1 | -7 | -1 | -- | -1 | -- | 26 | 3.0 |
| Coordinate | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sentence | 10 | -8 | -1 | -3 | -3 | -4 | -2 | -2 | -6 | -4 | -1 | -- | -6 | -3 | -5 | -4 | -3 | -5 | -2 | -6 | 10 | -5 | -8 | -3 | 104 | 11.9 |
| NP | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Compound VP | -3 | -2 | -2 | -1 | -2 | -2 | -1 | -6 | -5 | -1 | -1 | -1 | -2 | -3 | -1 | -- | -2 | -5 | -5 | -1 | -6 | -5 | -4 | -7 | 68 | 7.8 |
| Others | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Noun Clause | -6 | -1 | -3 | -- | -3 | -6 | -- | -7 | -9 | -5 | -3 | -2 | -4 | -7 | -6 | -4 | -2 | -2 | -4 | -2 | -3 | -3 | -2 | -2 | 86 | 9.8 |

Table II. Frequency and occurrence of usage of transformations of individual boys.

| Transformation | Third grade boys | | | | | | | | | | | | Frequency | % | | | | | | | | | | | | |
|-----------------|------------------|----|----|----|-----------------|----|----|----|-----------------|----|----|----|-----------|----|----|----|----|----|----|----|----|----|----|-----|-----|------|
| | IV-A eight boys | | | | IV-B eight boys | | | | IV-C eight boys | | | | | | | | | | | | | | | | | |
| Passive | -- | -- | -1 | -- | -- | -- | -- | -1 | -- | -1 | -- | -- | -- | -1 | -- | -1 | -1 | -- | 7 | .7 | | | | | | |
| Ob-Sep-Particle | -- | -1 | -- | -- | -- | -1 | -- | -- | -- | -1 | -1 | -- | -1 | -- | -- | -- | -1 | -1 | -- | 7 | .7 | | | | | |
| Adverb | -6 | -4 | -6 | -2 | -3 | -6 | -5 | -8 | -4 | -2 | -8 | -3 | 22 | -- | -4 | -5 | 13 | -9 | -3 | 13 | 10 | 17 | -4 | -3 | 160 | 16.9 |
| Negation | -7 | -3 | -4 | -3 | -6 | -9 | -1 | -2 | -2 | -2 | -3 | -2 | -7 | -- | -3 | -3 | -3 | -5 | -1 | -5 | -8 | -3 | -3 | 90 | 9.5 | |
| Affirm | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | --- | |
| So--too | -- | -1 | -- | -- | -- | -- | -- | -1 | -- | -1 | -- | -- | -- | -- | -2 | -- | -- | -- | -- | -- | -2 | -- | 7 | .7 | | |
| Either | -- | -1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7 | .7 | | |
| Neither--nor | -- | -1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7 | .7 | | |
| Yes/no Question | -- | -2 | -1 | -1 | -3 | -- | -- | -2 | -1 | -- | -1 | -- | -- | -- | -2 | -1 | -- | -2 | -- | -1 | -2 | -- | -- | 19 | 2.0 | |
| Relative | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 24 | 2.5 | |
| Question | -1 | -- | -- | -- | -1 | -1 | -- | -2 | -- | -2 | -- | -2 | -1 | -- | -4 | -2 | -1 | -- | -1 | -2 | -2 | -- | -1 | 24 | 2.5 | |
| Expletive | -2 | -3 | -6 | -7 | -4 | -3 | -4 | -2 | -- | -4 | -4 | -- | -1 | -- | -- | -- | -4 | -2 | -1 | -1 | -1 | -- | -2 | -- | 51 | 5.4 |
| Imperative | -- | -- | -- | -- | -- | -4 | -5 | -- | -- | -- | -- | -7 | -1 | -2 | -1 | -- | -- | -- | -- | -- | -- | -3 | -1 | 30 | 3.2 | |
| Coordinates | 10 | -4 | -5 | -5 | -- | -3 | -3 | -8 | -7 | -3 | -6 | -2 | -7 | -1 | -3 | -2 | 14 | -5 | -8 | 12 | -5 | 20 | -3 | -5 | 141 | 14.9 |
| NP | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | --- | --- | |
| Compound VP | -8 | -4 | -4 | -3 | -8 | -9 | -4 | 12 | -5 | -1 | -8 | -4 | -7 | -4 | -4 | -5 | -4 | -2 | -4 | -7 | -7 | 11 | -- | -5 | 130 | 13.7 |
| Others | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | --- | --- | |
| Noun Clause | -8 | -2 | -4 | 10 | -5 | 11 | -5 | 14 | -8 | -4 | -4 | -5 | -3 | -1 | -2 | -- | 13 | 11 | -3 | -6 | 11 | 10 | 10 | 10 | 160 | 16.9 |

Table II continued.

Table 11. Continued.

| Transformation | IV-A eight boys | | | | IV-B eight boys | | | | IV-C eight boys | | | | Frequency | % | | | | | | | | | | | | |
|--------------------|-----------------|----|----|----|-----------------|----|----|----|-----------------|----|----|----|-----------|----|----|----|----|----|----|----|----|----|-----|-----|------|------|
| Relative Clause | -1 | -2 | -1 | -1 | -4 | -4 | -3 | -3 | -- | -1 | -1 | -4 | -- | -3 | -1 | -1 | -- | -- | -4 | -2 | -2 | 42 | 4.4 | | | |
| Adverb Clause | -3 | -- | -1 | -- | -2 | -2 | -1 | -1 | -1 | -1 | -- | -- | -1 | -1 | -1 | -- | -2 | -7 | -3 | -6 | -3 | -- | 39 | 4.1 | | |
| Subordinate Clause | -1 | -3 | -8 | -2 | -1 | -2 | -1 | -- | -- | -2 | -4 | -2 | -1 | -- | -2 | -- | -1 | -3 | -3 | -4 | -5 | -2 | -2 | 54 | 5.7 | |
| Reflexive | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2 | .2 | | |
| Possessive | -3 | -2 | -7 | -3 | -7 | -8 | -3 | -3 | -5 | -4 | -3 | -2 | -5 | -4 | -5 | -3 | -6 | 10 | 10 | -6 | -7 | -3 | -7 | 121 | 12.8 | |
| Desc. Adj. | -5 | -1 | -3 | -3 | -5 | -4 | -3 | -5 | -1 | -2 | -7 | -2 | -3 | -1 | -1 | -1 | -3 | -3 | -- | -2 | -8 | -5 | -2 | -3 | 73 | 7.7 |
| Modifier-en to ing | -2 | -- | -1 | -4 | -1 | -2 | -- | -1 | -- | -- | -- | -2 | -- | -1 | -- | -- | -2 | -1 | -2 | -- | -- | -1 | -- | 22 | 2.3 | |
| Poss - ing | -- | -- | -- | -- | -- | -- | -1 | -1 | -- | -- | -- | -- | -- | -- | -1 | -- | -- | -- | -- | -1 | -- | -- | -- | 4 | .4 | |
| Comparative | -- | -- | -- | -- | -- | -1 | -- | -- | -- | -- | -- | -- | -- | -- | -1 | -- | -1 | -- | -1 | -- | -1 | -- | -- | 6 | .6 | |
| Appositive | -2 | -- | -- | -2 | -- | -- | -- | -1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -1 | -- | -- | -- | -- | -- | 6 | .6 | |
| V Comp-ing | -3 | -- | -- | -1 | -1 | -1 | -1 | -- | -- | -3 | -- | -1 | -1 | -- | -- | -- | -4 | -- | -2 | -5 | -1 | -1 | -- | 27 | 2.8 | |
| V Comp-inf | -6 | -2 | -2 | -9 | 10 | 11 | -2 | -1 | -8 | -7 | -5 | -5 | -4 | -1 | -1 | -7 | -8 | -6 | -7 | 12 | -8 | 16 | 11 | 14 | 163 | 17.2 |
| Comp. Nominal | -5 | -6 | -3 | -5 | -7 | -3 | -5 | 10 | -4 | -1 | -2 | -3 | -7 | -- | -- | -2 | -3 | -4 | -3 | -4 | -- | -4 | -1 | -5 | 87 | 9.2 |
| Nominalization | -- | -- | -- | -- | -7 | 10 | -1 | -2 | -1 | -- | -1 | -- | -1 | -- | -- | -- | -- | -2 | -- | -- | -1 | -- | -- | -- | 26 | 2.7 |
| V Comp NP | -1 | -- | -- | -- | -- | -- | -- | -2 | -- | -- | -- | -- | -- | -- | -- | -- | -1 | -- | -- | -3 | -- | -- | -- | 7 | .7 | |

FOOTNOTES

1. Leo Engler and Elaine Hannah, "Toward Norms for the Speech of Children," Kansas State Research Project 1964-1965. These investigators tape recorded the speech of first, third and fifth grade boys and girls in three public schools of Manhattan, Kansas. The tapes were transcribed in standard orthography without punctuation to provide the basic data for the study. This thesis is concerned with manuscripts IIA, IIB, IIC, IVA, IVB, IVC first and third grade boys of the Engler-Hannah data.
2. Noam Chomsky, Syntactic Structure (London, 1957), p. 85.
3. Werner F. Leopold, "The Study of Child Language and Infant Bilingualism," Word IV (1948), pp. 1-17.
4. Dorothy McCarthy, "Language Development in Children," Manual of Child Psychology, Leonard Carmichael, ed. (New York, 1954), pp. 492-630.
5. Mildred D. Templin, "Certain Language Skills in Children, Their Development and Interrelationships," Institute Child Welfare Monograph Ser. 26 (Minneapolis, 1957).
6. Paul Henry Mussen and John J. Conger, Child Development and Personality (New York), p. 220.
7. Jean Berko, "The Child's Learning of English Morphology," Word (1958), pp. 150-157.
8. Roger W. Brown, "Linguistic Determinism and the Parts of Speech," Journ. of Abnormal and Social Psychology LV (1957), pp. 1-5.
9. Roger Brown and Jean Berko, "Word Association and the Acquisition of Grammar," Child Development XXXI (1960), pp. 1-14.
10. Wick Miller and Susan Ervin, "The Development of Grammar in Child Language," The Acquisition of Language, Mono Child Development Ser 92 XXIX (1964), pp. 9-34.
11. Roger Brown and Colin Fraser, "The Acquisition of Syntax," The Acquisition of Language, Mono Child Development Ser 92, XXIX (1964), pp. 44-52.
12. Martin D. S. Braine, "The Ontogeny of English Phrase Structure: The First Phase," Language XXXIX (1963), pp. 1-15.
13. C. C. Fries, The Structure of English (New York, 1952), pp. 63-109.
14. George Mandler and Jean M. Mandler, "Serial Position Effects in Sentences," Journal of Verbal Learning and Verbal Behavior III (1964), pp. 195-202.

15. Ruth G. Strickland, "The Language of Elementary School Children. Its Relationship to the Language of Reading, Textbooks, and the Quality of Reading of Selected Children." Bulletin of the School of Education, Indiana Univ. XXXVIII (1962).
16. Walter D. Loban, "The Language of Elementary Children," NCTE Research Report, No. 1 (Champaign, 1963).
17. See Engler and Hannah, f. 1.
18. Paula Menyuk, A Descriptive Study of the Syntactic Structures in the Language of Children, Nursery School and First Grade. (Diss. Boston, 1961).
19. Loban, see f. 16, above.
20. Chomsky, see f. 2, above.
21. Robert B. Lees, "The Grammar of English Nominalizations," Inat'l Jour. of Am. Ling. XXVI (1960).
22. Lees, p. xviii.
23. Lees, ibid.
24. The technique of transformational grammar is described by Noam Chomsky in his book, Syntactic Structure. Although Chomsky has revised this theory in Aspects of the Theory of Syntax, this paper is concerned with pre-1964 theory. For further discussion see page 14.
25. See page 15 for explanation of the code.
26. Noam Chomsky, Aspects of the Theory of Syntax (Cambridge, Mass., 1965), p. 24.
27. Chomsky, p. 25.
28. Lees, p. xvii.
29. Menyuk, op. cit.
30. Chomsky, see f. 2, above.
31. Lees states in "Grammar of English Nominalizations" that the generalized transformations are more complex, p. 37.
32. Engler and Hannah, see f. 1, above.
33. Thematic Apperception Test.
34. G. S. Blum, The Blacky Pictures: A Technique for exploration of personality dynamics, Manuel (New York, 1950).

35. Leopold Bellak and Sonja Bellak, Children's Apperception Test (New York, 1949).
36. Leo Engler and Elaine Hannah, Unpublished paper, Spring, 1965.
37. Noam Chomsky, Syntactic Structure (London, 1957).
38. Lees, f. 21.
39. P. M. Postal, "Underlying and Superficial Linguistic Structure," Harvard Educational Review XXXIV (1964), pp. 246-266.
40. Carlotta S. Smith, "A Class of Complex Modifiers in English," Language XXXVII (1961), pp. 342-365.
41. Paul Roberts, English Syntax (New York, 1964).
42. Menyuk, f. 18.
43. For example, the transformational description of the Lord's Prayer covers 42 pages and includes 41 PS rules and 22 transformational rules as shown by Morton Bloomfield in A Linguistic Introduction to the History of English (New York, 1963), pp. 236-279.
44. Since in PS rules nouns have not been broken down into human-nonhuman, animate-inanimate a sentence such as, A paper wrote the goat could be generated. Furthermore, the complications involved in, for example, the division of nouns into human-nonhuman, animate-inanimate to prevent ungrammatical sentences is what prompted Chomsky to revise his theory of transformational grammar in Aspects of the Theory of Syntax.
45. Verbals are divided into more categories because of the different syntactic potential of various verbs.
46. Adverbials are a rich and as yet relatively unexplored system and therefore anything we say about them must be regarded as quite tentative. Lees, R. G., Grammar of English Nominalizations, pp. 6, 8.
47. The rules which have been cited from other sources (Chomsky, Lees, Postal, Smith) have all been adjusted to fit this particular corpus.
48. Chomsky, p. 26.
49. Engler and Hannah, f. 1.
50. Martin Joos, The English Verb Form and Meaning (Madison, 1964), p. 160.

LITERATURE CONSULTED

Albright, Robert W., and Joy Buck Albright. "Application of Descriptive Linguistics to Child Language," JSHR, I, iii (1958), 257-261.

Bach, Emmon. An Introduction to Transformational Grammar, New York, 1964.

Bach, Emmon. "Subcategories in Transformational Grammar," H. Lunt, ed., Proceedings of 9th International Congress of Linguistics, London, 1964, 672-678.

Bellack, Leonore and Sonya Bellak. Children Appreception Test, Psychological Corporation, New York, 1949.

Berko, Jean. "The Child's Learning of English Morphology," Word, XIV, ii-iii (1958), 150-157.

Berko, Jean and Roger Brown. "Psycholinguistic Research Methods," Paul H. Mussen, ed. Handbook of Research Methods in Child Development, New York, 1960, 517-557.

Bloomfield, Morton. A Linguistic Introduction to the History of English, New York, 1963.

Blum, G. S. and Leonard Newmark. "The Blacky: A Technique for Explanation of Personality Dynamics," Manual, Psychological Corporation, New York, 1950.

Braine, Martin D. S. "Learning Language Structure," unpublished paper presented at APA Convention, Philadelphia, 1963.

_____. "On Hearing the Grammatical Order of Words," Psych Rev, LXX, iv (1963), 323-348.

Braine, Martin D. S. "The Ontogeny of English Phrase Structure: The First Phase," Language, XXXIX, i (1963), 1-15.

Brown, Roger W. "Linguistic Determinism and the Parts of Speech," Jl Ab Soc Psych, LV, i (1957), 1-5.

Brown, Roger and Colin Fraser. "The Acquisition of Syntax," Monograph of the Society for Research in Child Development, Ser. 92, XXIX, i (1964), 44-56.

Brown, Roger and Jean Berko. "Word Association and the Acquisition of Grammar," Child Development, XXXI (1960), 1-14.

Carroll, John B. "Language Development," Encyclopedia of Educational Research, Chester W. Harris, ed., New York, 1960, 744-752.

_____. The Study of Language: A Survey of Linguistics and Related Disciplines in American, Harvard Univ., 1953, 289.

Chomsky, Noam. Aspects of the Theory of Syntax, Cambridge, Mass., 1965.

_____. "The Logical Basis of Linguistic Theory," H. Lunt, ed., Proceedings of 9th International Congress of Linguistics, London, 1964, 915-978.

_____. "The Logical Structure of Linguistic Theory," M.I.T. Press, 1961, microfilm.

_____. Review of B. F. Skinner (New York, 1957), "Verbal Behavior," Language, XXXV, 1 (1959), 26-57.

_____. "Some Methodological Remarks on Generative Grammar," Word, XVII (1961), 219-239.

_____. Syntactic Structures, London, 1957.

Engler, Leo and Elaine Hannah.

Fodor, Jerry A. and Jerrold J. Katz. The Structure of Language, Englewood Cliffs, New Jersey, 1959.

Joos, Martin. The English Verb: Form and Meaning, Madison, 1964.

Katz, Jerrold and P. M. Postal. An Integrated Theory of Linguistic Description, Cambridge, Mass., 1964.

Lees, Robert B. "The Grammar of English Nominalizations," LJAL, XXVI, iii (1960).

_____. "A Multiply Ambiguous Adjectival Construction in English," Language, XXXVI (1960), 207-221.

Lees, Robert (rev) Noam Chomsky. Syntactic Structures (The Hague, 1957), Language, XXXIII (1957), 375-408.

Leopold, Werner F. "The Study of Child Language and Infant Bilingualism," Word, IV, 1 (1948), 1-17.

Loban, Walter D. "The Language of Elementary School Children," NCTE Research Report 1, Champaign, Ill. (1963).

McCarthy, Dorothy. "Language Development in Children," Manual of Child Psychology, Leonard Carmichael, ed., New York, 1954, 2nd ed., 492-630.

Mandler, George and Jean M. Mandler. "Serial Position Effects in Sentences," JBLVB, III (1964), 195-202.

Matthews, P. H. (rev) R. B. Lees. "The Grammar of English Nominalization," LJAL, xxvi, iii (1960), Archivum Linguisticum, XIII, 1 (1961), 196-209.

Menyuk, Paula. "A Descriptive Study of the Syntactic Structures in the Language of Children Nursery School and First Grade," Unpubl. diss., Boston Univ., 1961.

_____. "Syntactic Structures in the Language of Children," Child Development, XXXIV (1963), 407-422.

_____. "Syntactic Rules Used by Children from Preschool through First Grade," Child Development, XXXV (1964), 533-546.

_____. "A Preliminary Evaluation of Grammatical Capacity in Children," JVLVB Behavior, II (1963), 429-439.

Miller, Wick and Susan Ervin. "Development of Grammar in Child Language," Monograph of the Society for Research in Child Development, Ser. 92, XXXIX, 1 (1964), 9-34.

Mussen, Paul Henry and John J. Conger. Child Development and Personality, New York, 1960.

Owens, Thomas. Transformational Grammar and the Teacher of English, New York, 1965.

Postal, P. M. "Underlying and Superficial Linguistic Structure," Harvard Ed. Review, XXXIV (1964), 246-266.

Roberts, Paul. English Syntax, alt. ed., New York, 1964.

_____. The Roberts English Series: A Linguistic Program, Book 3, 4, 5, 6, New York, 1966.

Rogovin, Syrell. Modern English Sentence Structure, New York, 1964.

Sabliskii, Julia A. "A Selective Annotated Bibliography on Child Language," The Linguistic Reporter, VII (1965), 4-6.

Smith, Carlota S. "A Class of Complex Modifiers in English," Language, XXXVII, 111 (1961), 342-365.

Strickland, Ruth G. The Language of Elementary School Children. Its Relationship to the Language of Reading Textbooks and the Quality of Reading of Selected Children, Bulletin of the School of Education, Indiana Univ., XXXVIII (1962).

Templin, Mildred D. "Certain Language Skill in Children, Their Development and Interrelationships," Inst. Child Welfare Monograph Series, No. 26, Minneapolis, 1957.

THE SPEECH OF FIRST AND THIRD GRADE BOYS
CONTRASTED BY MEANS OF TRANSFORMATION GRAMMAR

by

MARY LOU ALEXANDER

B. A., Oklahoma Baptist University, 1956

AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF ARTS

Department of Speech

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1966

This thesis is an attempt to use a transformational grammar to contrast the speech of first and third grade boys. Dr. Leo Engler and Dr. Elaine Hannah had recorded some thirty-six hours of the speech of children in the first, third, and fifth grades in public schools of Manhattan, Kansas, for a research project at Kansas State University seeking norms for the speech of children. The recordings were transcribed and subjected to a linguistic analysis. This thesis is concerned with manuscripts IIA,B,C, and IVA,B,C--first and third grade boys in an interview situation and deals with the transformations found within the data.

Purpose: The purpose of this study is to indicate the development of children's language by contrasting the speech of first and third-grade boys, using a transformational grammar for the analysis. The hypothesis upon which this thesis is based is that there are some transformational rules that increase in frequency of occurrence as children's language develops and matures.

Procedure: A transformational grammar was written for one interview and then expanded or corrected as necessary for the entire corpus, considered interview by interview. This grammar is based upon pre-1964 transformation theory and consists of phrase structure rules and transformational rules. The sentences in the data were analyzed noting what transformations were used. These transformations were then tabulated. Tables were then prepared to indicate the frequency of occurrence and the percentage of times used in all the sentences.

Results: The results reveal that the first grade boys use five single base transformations--particle separation, negation, affirm, tag answers, and information question--more frequently than third grade boys. The third grade boys use the following single base transformations more frequently: passive,

adverb movement, yes/no question, expletive there, and imperative.

The third grade boys use all the generalized (two sentence) transformations, except the possessive, more frequently than the first grade boys. The greatest difference apparent in the data is the use of clauses--noun, relative, adverb, and subordinate clauses. The third grade boys use these grammatical structures 40.7% of the total number of sentences and the first grade boys use them 22.7%. The other generalized transformation which the third grade boys used more frequently than the first grade boys are coordinate sentences, compound noun and verb phrases, descriptive adjective, modifying, poss-ing, comparative, appositive, verb-to-verb, verb-ing, compound nominal, and nominalization.

Conclusion: The results reveal that the third grade boys exhibit a higher frequency of occurrence of the generalized transformation than do the first grade boys, indicating that the sentence structure increases in complexity with maturation.